AMENDMENTS TO THE SPECIFICATION

In the title, please add "AND RESULTANT DISCS" so the title reads as follows:

--METHOD FOR INCREASING FLUORESCENT SIGNAL OF OPTICAL DISCS WITH FLUORESCENT READING AND RESULTANT DISCS--.

Please replace the third full paragraph on page 1 of the Specification with the following amended paragraph:

--The most cheap and absolute optical carriers are CD ROM and WORM discs. However, the capacity and signal/noise ratio of the existing optical discs is not ~~enough high~~ high enough for the developed computers and videosystems of the new generation. Thus, there are intensive development of advanced optical memory systems with increased record density, high signal/noise ratio, increased storage and usage stability and low cost. The promising ways of increasing optical carrier capacity are:

- increased number of active bits per active layer due to reduced pit length and increased number of pits; and
- multilayer disc creation.--

Please replace the fourth full paragraph on page 1 of the Specification with the following amended paragraph:

--These ways were realized in the recently launched DVD standard, where pits are half in size, and the number of layers reaches 4 - two from each side of the substrate. [[It]] This allows reaching 25 GB capacity on disc.--

Please replace the fifth full paragraph on page 1 of the Specification with the following amended paragraph:

--At the same time, ~~future~~ further increase of active layers on ~~dise~~ discs with reading by means of reflection causes a rapid rise in the system price and lowers the quality of recorded data reproduction. Thus, future increase of disc capacity is not possible. The patents JP 63,195,838 (12.08.1988)[[;]] and JP 02,308,439 (21.12.1990) describe reading by

means of fluorescence. The principle idea is that after recording the recorded spots are non-fluorescent, and the background is fluorescent. At reading, the relevant laser beam excites fluorescent light, which is registered on the detector.--

Please replace the first full paragraph on page 2 of the Specification with the following amended paragraph:

--At the same time, the main advantage of fluorescent reading is [[in]] its ~~most~~ suitability for three-dimensional optical memory carriers, such as [[a]] multilayer ~~disc~~ discs [B. Glushko, V. Krugkin, E. Levich].--

Please replace the third full paragraph on page 2 of the Specification with the following amended paragraph:

--Single-layer optical discs, where data is recorded in ~~pit~~ pits or spiral grooves[[,]] filled with fluorescent material, are laminated on each other to form a multilayer system, where active layers containing fluorescent pits or grooves ~~with~~ 0.5-1.0 ~~mkm~~ μm in depth are separated by inactive intermediate layers of 20-50 ~~mkm~~ μm in depth, that are transparent for the excitation laser wavelength and fluorescent light. Fluorescent media for a multilayer optical disc with fluorescent reading shall meet a range of requirements, the most important being:

1. Fluorescent media absorption range shall coincide with the reading laser wavelength.
2. Quantum yield of fluorescent media shall be the highest possible and shall stay the same during long-term storage and use.
3. Absorption and fluorescence ranges shall not overlap significantly so not to cause repeated absorption of fluorescent light.
4. Fluorescent composition shall not disperse the passing excitation radiation and fluorescent light.
5. Fluorescent light shall also coincide well with the matrix and shall not migrate from it.
6. Fluorescent composition shall fill the pits or ~~groove~~ grooves well and shall not tincture the space in between.
7. The solution used for filling pits or grooves shall not ~~solve~~ dissolve the substrate, carrying pits or grooves, or change their geometry and size.

8. Refraction ratio of the fluorescent composition shall be close to the one of the substrate, carrying pits or ~~groove~~ grooves.
9. Characteristics of the fluorescent composition shall not be effected by storage or use of a multilayer optical disc.--

Please replace the fourth full paragraph on page 2, continuing onto page 3 of the Specification with the following amended paragraph:

--All these requirements make it a non-trivial task to solve. It is especially difficult to achieve high intensity of' fluorescence from the active layer, [[as]] if we consider it to be 100-500 nm thick, with the concentration of fluorescent dye ~~shall be~~ equal to 3-$20x10^{-2}$ Mol per kg of polymer. At such ~~concentration~~ concentrations, the intensity of fluorescence from most of the organic luminophores will be rapidly reduced or can disappear ~~at all~~ due to the formation of associated forms of the dye with sandwich structure in the polymer. Such forms are non-fluorescent and they extinguish fluorescence of monomeric forms of the dye. Ability of the dye to form ~~dimmers~~ dimers and other associates is ~~much~~ connected to the composition and structure of the polymeric matrix, used plasticizers and other ingredients of the polymeric composition. However, such high concentrations of the dye (3-$20x10^{-2}$ Mol/kg) nearly always cause formation of associates.--

Please replace the second full paragraph on page 3 of the Specification with the following amended paragraph:

--The proposed fluorescent compositions were used for production of CD ROM and WORM discs with fluorescent reading, including multilayer structures. The recorded digital data was read on special drives, providing registration of the fluorescent signal. At the same time, ~~future~~ further increase of fluorescence intensity from active layers of the optical discs is needed to increase stability and quality of the read data, to simplify the construction and to lower cost of production of the reading devices for fluorescent discs. This will also allow increasing the number of active layers on multilayer discs, thus increasing the optical memory capacity.--

Please replace the third full paragraph on page 3 of the Specification with the following amended paragraph:

--Taking the above into consideration, the purpose of this Invention is the development of ~~method~~ methods of increasing fluorescent signal ~~level~~ levels from the optical discs with fluorescent reading to obtain optical memory with high capacity.--

Please replace the fourth full paragraph on page 3 of the Specification with the following amended paragraph:

--The other purpose of the present Invention is the development of ~~method~~ methods of increasing fluorescent signal ~~level~~ levels from the optical discs with fluorescent reading to ~~receive~~ achieve higher stability and reproduction quality, simplify the construction and to lower cost of the device for reading fluorescent ~~signal~~ signals from optical discs.--

Please replace the first full paragraph on page 4 of the Specification with the following amended paragraph:

-- The ~~future~~ further purpose of this Invention is the development of ~~method~~ methods of increasing fluorescent signal ~~level~~ levels from the optical discs with fluorescent reading both for single-layer and multilayer optical memory materials with high capacity and high contrast.--

Please replace the second full paragraph on page 4 of the Specification with the following amended paragraph:

--According to the purpose of the present Invention, the above method of increasing the fluorescent signal from optical discs with fluorescent reading assumes use in the fluorescent composition of high-molecular compounds, plasticizers and other ingredients, ~~preventing~~ which prevent formation of non-fluorescent ~~dimmers~~ dimers and other ~~dyes~~ dye associates in the active media.--

Please replace the fourth full paragraph on page 4 of the Specification with the following amended paragraph:

--According to the ~~future~~ further purpose of the ~~constant~~ present Invention, the above method of increasing the fluorescent signal from optical discs assumes using in the

polymer compositions of active layers the ~~adds, improving~~ additives that improve adhesion of the active layers to the substrate or the primer. According to the further purpose of the present Invention, the above method of increasing the fluorescent signal from optical discs assumes using in the substrate or primer ~~the~~ substances, which ~~providing~~ provide effective absorption of non-fluorescent ~~dimmers~~ dimers and other associates of ~~the~~ ionic pairs of cationic dyes in the active layer on the boundary between the substrate or the primer with the active layer.--

Please replace the sixth full paragraph on page 4 of the Specification with the following amended paragraph:

--First, we shall consider the variant, when the substrate - a transparent disc from polycarbonate (PC) or polymethyl methacrylate (PMMA) with pits or grooves 0.1-0.5 [[μμ]] μm deep -is covered with a primer, which is later covered with an active layer, containing at least a fluorescent dye, film-making polymer, plasticizers and other ingredients, thereby preventing formation of non-fluorescent ~~dimmers~~ dimers and other associates of the dye, thus providing high fluorescence of the dye.--

Please replace the seventh full paragraph on page 4, continuing onto page 5 of the Specification with the following amended paragraph:

--The primer is produced using different materials, ~~providing~~ which provide high adhesion to polycarbonate and polymethyl methacrylate substrates, and is evenly distributed upon the substrate, pits and grooves surface, thereby forming a film 10-100 nm thick, that is impermeable ~~for~~ to the solvents and other ingredients of the active layer.--

Please replace the third full paragraph on page 5 of the Specification with the following amended paragraph:

--~~Film-forming~~ The film-forming polymer can be chosen among a wide range of resins, for example:cellulose esters, such as nitrocellulose, cellulose acetate, cellulose acetate butyrate; cellulose ethers such as methyl cellulose, ethyl cellulose, butyl cellulose; vinyl resins such as polyvinyl acetate, polyvinyl butyral, polyvinyl acetal, polyvinyl alcohol and polyvinyl pyrrolidon; acrylic resins such as polymethylmethacrylate, polybutyl acrylate,

polymethacrylic acid, polyacrylic amide and polyacrylonitrile[[,]]; polyvinylchloride, and perchlorvinyl resin.--

Please replace the fourth full paragraph on page 5 of the Specification with the following amended paragraph:

--Film-forming properties of the used resins an the plasticity of the recording layer can be improved by adding to resins the proper ~~plastisizer~~ plasticizer such as dibutyl phthalate, dioctyl phthalate or tricresyl phosphate.--

Please replace the fifth full paragraph on page 5 of the Specification with the following amended paragraph:

--To create a recording layer of the present Invention, the above-mentioned ingredients are dissolved in organic solvent or introduced in it as microcapsules less than ~~0,2 mkm~~ 0.2 μm in size, prepared by known methods, ~~with future~~ further covering the substrate with this compound by spin coating, roller coating or dip coating.--

Please replace the first full paragraph on page 6 of the Specification with the following amended paragraph:

--Various surface-active substances, such as butyl glycol, propylene glycol, dimethyl glycol, diethyl glycol, etc., improve adhesion of the active layers to the substrate or the primer, as well as ~~heat~~ heating the material at 100-120°C.--

Please replace the second full paragraph on page 6 of the Specification with the following amended paragraph:

--In another embodiment, the ~~other variant of realizing the purposes of the~~ present Invention differs from the previous by embodiment in that the substrate is formed by a polymer~~, providing effective~~ that prevents formation of fluorescent ~~dimmers~~ dimers and other associates of the ionic pairs of cationic dyes on its boundary with the active layer, thus providing good adhesion of the active layer to the substrate. The substrate is covered with the active layer, containing a fluorescent dye, that is soluble in hydroxyl solvents of the film-

forming polymer, a plasticizer and the ~~add~~ additives, which improves adhesion of the active layer to the substrate.--

Please replace the first full paragraph on page 15 of the Specification with the following amended paragraph:

--Table 1 illustrates the effect of increasing fluorescence intensity by using a filmmaking polymer, which reduces the ability of cationic dyes to form non-fluorescent ~~dimmers~~ dimers and other ~~dyes~~ dye associates. The table, as well as all the tables given below, utilizes the following designations:
D_1- optical density of the monomer form in a maxima of absorption;
D_2- optical density of associated forms in a maxima of absorption;
D_1/D_2- the ratio, describing the ability of the dyes to form associates;
1/2 -half-width of the absorption band on the 0.7 D_1 level, describing heterogeneity of the absorption band due to the formation of associates and by-products of the specific reaction between the dyes and the medium;
$\lambda\lambda_{max}$ - maximum of fluorescence;
I_{fl} - intensity of fluorescence in relative figures.--

Please replace the third full paragraph on page 15 of the Specification with the following amended paragraph:

--Table 2 illustrates the effect of increasing fluorescence intensity by using a primer between the substrate and the active layer, which allows depositing the fluorescent compositions containing solvents[[,]] aggressive to the substrate.~~]~~ Plotting of a liquid silica glass primer 80 nm thick on a PC substrate allows depositing compositions based on PMMA and PVC, containing methylenechloride and dioxane, which also ~~solves~~ dissolves the PC substrate.--

Please replace the second full paragraph on page 16 of the Specification with the following amended paragraph:

--Thus, the proposed ways of increasing fluorescence ~~or~~ of the polymeric compositions[[,]] containing super-high fluorescent dyes (3-20 10^{-2} Mol/kg of polymer)

which usually cause rigid ~~deprecation~~ depreciation of fluorescence can be used for creation of optical recording media for low-cost CD ROM, DVD and WORM discs with simplified structure and with increased quality and stability of data reproduction at reading by fluorescence.--